



UNITED STATES
 NUCLEAR REGULATORY COMMISSION
 REGION II
 101 MARIETTA STREET, N.W.
 ATLANTA, GEORGIA 30323

JUL 27 1987

Report Nos.: 50-269/87-26, 50-270/87-26, and 50-287/87-26

Licensee: Duke Power Company
 422 South Church Street
 Charlotte, NC 28242

Docket Nos.: 50-269, 50-270,
 and 50-287

License Nos.: DPR-38, DPR-47, and
 DPR-55

Facility Name: Oconee 1, 2, and 3

Inspection Conducted: June 22-26, 1987

Inspector: F. N. Wright 7/23/87
 Date Signed

Approved by: C. M. Hosey 7/23/87
 Date Signed
 C. M. Hosey, Section Chief
 Division of Radiation Safety and Safeguards

SUMMARY

Scope: This was a routine, unannounced inspection in the areas of previous enforcement matters, external exposure control, organization and management controls, facilities, Program for maintaining radiation exposure as low as reasonably achievable, (ALARA), transportation of radioactive materials, IE Bulletins and Notices, and allegations followup.

Results: No violations or deviations were identified.

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REPORT DETAILS

1. Persons Contacted

Licensee Employees

D. J. Berkshire, Nuclear Production Health Physicist
K. F. Brown, Assistant Engineer, Instrument Electrical
T. E. Carroll, Health Physics Supervisor
S. A. Coy, General Supervisor Health Physics
J. D. Davis, Production Specialist
*R. H. Ledford, Quality Assurance Surveillance Supervisor
*F. E. Owens, Compliance Shift Supervisor
J. E. Owens, Health Physics Supervisor
*G. T. Powell, Associate Engineer Health Physics
T. A. Smith, Health Physics Supervisor
*M. D. Thorne, General Supervisor Health Physics
*M. S. Tuckman, Station Manager
*C. T. Yongue, Station Health Physicist

Other licensee employees contacted included eight health physics technicians, two clerks, and five craft employees.

U. S. Nuclear Regulatory Commission

*J. Bryant, Senior Resident Inspector
L. Wert, Resident Inspector

*Attended exit interview

2. Exit Interview

The inspection scope and findings were summarized on June 26, 1987, with those persons indicated in Paragraph 1 above. The licensee did not identify as proprietary any of the materials provided to or reviewed by the inspector during this inspection.

3. Licensee Action on Previous Enforcement Matters (92702)

(Closed) Violation (50-269,270,287/85-42-01) Failure to provide positive access control over each entry into a high radiation area. The inspector reviewed the licensee's response dated April 1, 1986, and verified that the corrective actions specified in the response had been taken.

(Closed) Violation (50-269,270,287/87-03-01) Failure to evaluate the extent of radiation hazards present during the disassembly of a Reactor Coolant Pump. The inspector reviewed the licensee's response dated March 4, 1987 and a supplemental response of April 23, 1987 and verified that the corrective actions specified in the responses had been taken.

(Closed) Unresolved Item (URI) (50-269,270,287/87-03-03) During the inspection of January 12-16, 1987, the licensee was unable to provide a type test for the detectors used in the Containment High Range Monitoring system as required by NUREG-0737 which demonstrated linearity on all scales up to $1 \text{ E} + 6 \text{ R/hr}$. The inspector reviewed the licensee's copy of the Type Test Data and other calibration requirements. The Type Test Data indicated linearity through all ranges.

4. Organization and Management Controls (83722)

The licensee is required by Technical Specification 6.1.1.3 to implement the minimum operating shift requirements specified in Table 6.1-1. The inspector reviewed the licensee's organization staffing level and lines of authority as they relate to radiation protection, radioactive material control, and transportation of radioactive material and verified that the licensee had not made organizational changes which would adversely affect the ability of the licensee to control radiation exposures and radioactive material. The inspector discussed with selected Radiation Protection Supervisors how frequently they toured the plant and radiation control areas. The inspector determined that supervisor tours of the facility were expected to be made daily.

No violations or deviations were identified.

5. External Occupational Exposure Control and Personnel Dosimetry (83724)

10 CFR 20.101(b)(3) requires the licensee to determine an individual's accumulated occupational dose to the whole body on a form NRC-4 or equivalent record prior to permitting the individual to exceed the limits of 20.101(a). The inspector reviewed selected occupational exposure histories for various plant personnel. The exposure histories were being completed and maintained as required by 10 CFR 20.102.

10 CFR 20.202 requires each licensee to supply appropriate personnel monitoring equipment to specific individuals and require the use of such equipment. During tours of the plant, the inspector observed workers wearing appropriate personnel monitoring devices.

10 CFR 20.203 specifies the posting, labeling and control requirements for radiation areas, airborne radioactivity areas and radioactive material. During tours of the plant, the inspector reviewed the licensee's posting and control of radiation areas, high radiation areas, airborne radioactivity areas, contaminated areas, radioactive material areas, and the labeling of radioactive material. The inspector checked the security of the locks for selected high radiation areas.

10 CFR 19.11 requires that each licensee post current copies of 10 CFR 19, 10 CFR 20, the license and the operating procedures applicable to licensed activity or if posting of the documents is not practicable, the licensee may post a notice which describes the document and states where it may be examined. 10 CFR 19.11 further requires that copies of any Notice of

Violation involving radiological working conditions be conspicuously posted within two working days after receipt of the documents from the Commission. The inspector observed the posting of notices required by 10 CFR 19.11 during tours of the plant.

No violations or deviations were identified.

6. Facilities and Equipment (83727)

Facilities

The facilities provided for radiation protection activities include a central counting lab; instrument calibration and maintenance shop; respirator issuance, maintenance, and repair shop; health physics technician offices in each units auxiliary building and office space in the Health Physics Building and Maintenance Support Building for health physics management and specialist.

Appropriate change /locker rooms are provided for both men and women. Showers, sinks and radiation monitoring equipment (portable thin window GM friskers) are provided in all of the change rooms if needed for the decontamination of personnel. The licensee has also added whole body friskers for contamination detection in each of the change rooms.

Appropriate storage facilities for instruments, air samplers and miscellaneous radiation protection related supplies were available and stocked.

The licensee began operation of a sandblast facility in October 1986 and a liquid abrasive unit January 1987 in an attempt to reduce radwaste volume. Licensee representatives reported approximately 6600 cubic foot of contaminated metal had been decontaminated as a result of these efforts.

Equipment

The licensee had just recently positioned approximately twenty hand and foot monitors in various locations throughout the facility and at Radiation Control Area exits. At the time of the inspection, several of the new detectors had not been placed in service. The licensee continued to use the thin window GM detectors in these areas, while set-up and calibration of the new hand and foot monitors continued.

No violations or deviations were identified.

7. Maintaining Exposures ALARA (83728)

10 CFR 20.1(c) specifies that licensees should implement programs to keep workers' dose as low as reasonably achievable (ALARA). The recommended elements of an ALARA program are contained in Regulatory Guide 8.8. "Information Relevant to Ensuring that Occupational Exposure at Nuclear

Power Stations Will Be ALARA," and Regulatory Guide 8.10, "Operating Philosophy for Maintaining Occupational Radiation Exposures ALARA."

The inspector reviewed the licensee's method for establishing facility annual ALARA person-rem goals. The licensee's ALARA section receives input from the individual sections annually on projected tasks. The 1987 annual ALARA person-rem goal for the facility was originally set at 1064 person-rem. The facility was at 56 percent of its goal by May 1987.

Based on the existing exposure and the projected exposure for the unit one outage to begin in August, 1987, the licensee revised the 1987 goal up to 1218 person-rem. The additional tasks to be performed in 1987 which resulted in the need to revise the goal included chemical cleaning of the steam generators, additional reactor coolant pump work, nozzle dam work and steam generator tube sleeving. The additional work is expected to result in an increase of about 170 person-rem for the facility.

The inspector reviewed the following licensee procedures which implement the station ALARA program:

Station Directive 3.3.5 (TS), "ALARA Program," revision dated January 1987

HP/O/B/1000/73, "Health Physics ALARA Pre-Planning", revision dated October 24, 1986

The inspector reviewed selected ALARA Pre-Planning Documentation.

No violations or deviations were identified.

8. Transportation (86721)

10 CFR 71.5 requires that a licensee who transport licensed material outside the confines of its plant or other place of use, or who delivers licensed material to a carrier for transport, shall comply with the applicable requirements of the regulations appropriate to the mode of transport of the Department of Transportation in 49 CFR Parts 170 through 189.

The inspector reviewed selected records of radioactive waste and radioactive material shipments performed during 1987. The shipping manifests examined were prepared consistent with 49 CFR requirements. The radiation and contamination survey results were within the limits specified for the mode of transport and shipment classification. The inspector selectively performed independent calculations using licensee's records of material radioactive nuclide composition and verified that the shipments reviewed had been properly classified.

No violations or deviations were identified.

9. Followup on IE Bulletins (92703)

(Closed) BULLETIN 78-08 (50-269/87-FRP-02)

On April 5, 1978, two radiation protection technicians at Portland General Electric Company's Trojan Nuclear Power Plant received whole body radiation doses of 27.3 and 17.1 rem while performing a survey adjacent to an exposed section of the fuel element transfer tube during the plant's first refueling outage. As a result, the NRC issued IE Bulletin 78-08, Radiation Levels from Fuel Element Transfer Tubes, dated June 12, 1978. The bulletin required licensees to perform a review of shielding design of plant areas adjacent to fuel transfer tubes, to identify potential high radiation areas, both continuous and transient, assure positive control of the areas, conduct special surveys and provide a written response of the findings and actions to resolve any problems to the NRC.

The inspector reviewed the licensee's response to the Bulletin dated August 11, 1978, and verified that licensee actions specified in the response had been taken.

In the August 11, 1978 response to NRC, the licensee reported that surveys in the Unit 1 penetration rooms had indicated that there was no problem with the shielding design of the transfer tubes. The response also stated that additional areas within the Unit 1 Reactor Building would be investigated in an upcoming refueling outage. The license stated that in as much as the design of Unit 1 is representative of all three Oconee units, there does not appear to be any excessive radiation levels present at the fuel element transfer tubes at Oconee.

The inspector reviewed the results of the unit 1 reactor building survey and the actions taken by the licensee as a result of the investigation. In a intrastation letter dated October 20, 1978, the station Health Physicist reported that certain areas inside the Unit 1 Reactor Building need to be posted as High Radiation Areas during fuel movement through the transfer tubes. Survey results showed radiation streaming, in a two inch seismic gap between the transfer tube shield and the Reactor Building wall, up to 25 Roentgens/hour. Radiation measurements made on the basement and third level of the reactor building (below and above the transfer tube shield) indicated radiation exposure levels of 100 to 150 milliRoentgens/hour next to the reactor building wall.

In another intrastation letter dated November 2, 1978, the station Health Physicist reported that the following areas needed to be marked as High Radiation Areas:

- Basement level, below the fuel transfer tubes, behind the emergency sump
- First level on east and west sides of transfer tubes near the incore wire and tank area, and near the B core flood area.

The letter also reported that operations had put in a procedure change to require health physics notification at the start of the fuel transfer procedure in order that the above locations could be secured.

The inspector reviewed the following licensee procedures:

OP/O/A//1506/1 "Fuel and Component Handling", dated August 20, 1986 which requires the operations staff to notify Health Physics of fuel movement. The procedure requires Health Physics to set up barricades around transfer tubes prior to transporting irradiated fuel through the tubes.

OP/1/A/1502/07 "Refueling Procedure," dated May 15, 1985 which requires Health Physics to survey the transfer canal area of the units penetration room.

The inspector determined that access to the fuel transfer tube was secured by approximately 3 feet of concrete bricks over a steel hatch and that access to the hatch area is controlled by a locked ladder cover.

The inspector discussed the importance of verifying the security of the fuel transfer tube area prior to fuel transfer and of making appropriate radiation surveys during fuel transfer.

The station Health Physicist agreed to consider the use of a fuel transfer procedure that could be used to ensure and document access security and appropriate radiation surveys were taken.

The inspector verified that the licensee had made radiation surveys during fuel transfer in the most recent refueling outage.

No violations or deviations were identified.

10. Followup on Open Items (92701)

(Closed) Inspector Followup Item (IFI)(50-269,270, and 287/86-35-01) This item concerned adequate frisking techniques for personnel monitoring. The inspector determined that the licensee had purchased additional hand and foot monitors and whole body friskers to reduce the dependency on hand held thin window frisking monitors. The licensee had also initiated a monitoring training program for all plant personnel.

(Closed) IFI (50-269,270, and 287/87-03-02) This item concerned the assessment of silver-110M (Ag-110M) in the personnel intakes of radioactivity that occurred on January 13, 1987. The intakes of radioactive material occurred while personnel were working on the 3B1 Reactor Coolant Pump Shaft. The inspector reviewed the results and methods used by the licensee in the assessment of intake of Ag-110M, for the affected individuals, and had no further questions.

11. Followup on Allegations (99014)

Allegation (R-11-86-A-0092)

Following work in the Reactor Building on February 21, 1986, workers were instructed to return to the Reactor Building the following day to remove lead shielding that had been installed. Dosimetry was turned in, and later it was noted that radiation exposure readings were lowered from readings initially turned in. Health Physics technicians were questioned about the adjusted readings and stated that the readings were adjusted after Health Physics technicians read the TLDs. There is a question as to how Health Physics technicians could read the TLDs after the fact and why only personnel from the Great Barrier Insulation Company were affected.

Discussion

The licensee utilized both self-reading dosimeters (SRDs) and Thermoluminescent Dosimeters (TLDs) in monitoring routine radiation exposures. The SRD's are used to monitor an individual's radiation exposure on a job by job basis and the TLD is used to monitor an individual's exposure over an entire month. The licensee tracks an individual's radiation exposure by SRD until the TLD is evaluated at which time the licensee routinely replaces the SRD monitoring results with the person's TLD monitoring results. TLDs typically provide a higher degree of accuracy. It is also common for the monthly results from radiation monitoring by SRD to indicate slightly higher exposures than TLDs at Oconee due to the use of 0-500 mR SRDs and the rounding up of readings to the next highest 10 mR increment. Therefore when the monthly results of the TLD replace the monthly results of SRD monitoring small reductions in personnel exposures are typically observed. The licensee has procedures to investigate large discrepancies in TLD and SRD results.

The inspector reviewed the February, 1986 TLD and SRD exposure records for the alleged and other employees of the Great Barrier Insulation Company. The difference in the February, 1986 TLD and SRD dose for the alleged was small and less than the value that would cause an investigation in accordance with the licensee's TLD/SRD discrepancy investigation program. However, another individual of the Great Barrier Insulation Company had a TLD/SRD difference which met the licensee's criteria for a TLD/SRD discrepancy investigation. The licensee's TLD/SRD discrepancy investigation procedure required that the individual's TLD and SRD utilized in February 1986 undergo a test for accuracy. The licensee exposed both the TLD and SRD to known values of radiation. The SRD and TLD each passed the accuracy test having reproduced measurements within the allowed tolerance.

The inspector discussed the investigation results with licensee representatives. The inspector determined that when personnel exposure differences exist between SRD and TLD measurements it was the licensee's policy to assign personnel dose based upon the TLD measurement. The inspector determined that the licensee's investigation program for TLD/SRD discrepancies does not include a requirement to interview the affected

individual. The inspector stated that having a policy to interview persons having significant TLD/SRD exposure discrepancies could assist the licensee in determining personnel monitoring problems and help assure affected individuals that efforts to assign the appropriate dose were made.

Finding

The allegation was not substantiated. The inspector determined the discrepancy between the alleged TLD results and the SRD results was small and did not meet the criteria for implementing the licensee's TLD/SRD discrepancy investigation procedures.

No violations or deviations were identified.

12. Information Notices (IEN) (92727)

The inspector determined that the following information notices had been received by the licensee, reviewed for applicability, distributed to appropriate personnel, and that actions, as appropriate, were taken or scheduled.

IEN 86-86: Clarification of Requirements For Fabrication and Export of Certain Previously Approved Type B Packages.

IEN 86-103: Respirator Coupling Nut Assembly Failures

IEN 86-107: Entry Into PWR Cavity with Retractable Incore Detector Thimbles Withdrawn.

IEN 87-03: Segregation of Hazardous and Low-Level Radioactive Waste

IEN 87-07: Quality Control of Onsite Dewatering/Solidification Operations by Outside Contractors